Mayabi Islam Summer 2013

Water, Energy, and Sustainability

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Lesson: Classroom Composting

Grade: 1

## Topic: Recycling

Objectives:

Students will understand the terms compost and decomposition.

Students will describe the process of decomposition.   
Students will learn to recycle waste through composting.

Students will identify waste that can be composted.

Personal Goals: Our school is making an effort to become a “greener” school. We’ve had professional development around implementing curriculum that encourages students to become more environmentally responsible. With young students, composting is one way that students can assume responsibility for their actions with regards to waste. Additionally, composting is an activity that’ll continue to be reinforced all year long, thereby allowing students to truly understand the value of composting/recycling. I want students to learn to be conscious of how their decisions are affecting the world around them.

Professional Goals: 3C from Danielson framework Competency 3C Engaging Students in Learning

I am working on this framework from Danielson because I would like to have students be more actively engaged in their learning. I want to ensure that I have a range of activities and assignments that require students to focus on depth over breadth are open ended, and is hands on. This lesson will also provide both independent and group work, thereby giving students a chance to participate in their own way. The structure and pacing of the lesson is also appropriate since each component of the lesson offers teacher modeling and then guided learning.

Standards:

**Elementary Science Core Curriculum Standard 4**

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

1.1b Plants require air, water, nutrients, and light in order to live and thrive.

Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.

5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.

Key Idea 6: Plants and animals depend on each other and their physical environment.

6.1d Decomposers are living things that play a vital role in recycling nutrients.

**ELA Standards**

RL.2.11 Common Core Standards- Make connections between self, text, and the world around them (text, media, social interaction)

Vocabulary: compost, decomposition

Materials: Science journal, Ants in your Pants and Worms in your Plants by Diane DeGroat, 4-5 “trash” bins, a range of inorganic and organic items like paper, plastic, and general food waste collected from the classroom and cafeteria, 4-5 water gallons with the tops sliced open, magnifying glasses, soil

Procedure:

Pre-Assessment

Gather students on the carpet and state the following scenario: Let’s pretend I’m eating a banana outside. When I’m finished with my banana, I’ve tossed the banana peel into our school garden.

* What do you think will happen to the banana peel?
* What will the banana peel look like in a few days?

Write down ideas on board/chart paper. `

Connection:

Introduce the word decomposition and explain what it means based on student responses. Have students make real-world connections.

* Can you think of other things that might decompose? Describe what you noticed.

Write ideas down on board/chart paper.

Read Aloud/Modeling

Read the book Ants in your Pants and Worms in your Plants by Diane DeGroat aloud to the students. During the read aloud, think aloud to the following question:

* I wonder if we can figure out a helpful way to use decomposition...
* Introduce the word composting and discuss how it works and the benefits. When people work to use food and other natural materials to decompose, they are composting. Composting is a natural way to recycle.

Guided:

Have students turn and talk and answer the following question:

* How can we use composting to help out our school? Provide examples of how we can use composting in the school.

Independent Activity Procedure:

Explain to students that since composting is a natural way to recycle, they will be investigating how they can do a better job of composting the items in their classroom trash bins.

The class will be divided into groups of 4-5 students and each group will be assigned a trash bin. Each trash bin will contain a be a range of organic and inorganic items such as paper, plastic, uneaten food from their lunches/snack, etc. Each group will record all of the items in their trash bins in their science journal. Then, model how to compost items from a trash bin. Using your demo trashcan, place soil at the bottom of your gallon bin. Then layer with some of the items from the demo bin in several repeating layers with the soil. Explain to students that once they’ve recorded the items in their trash bin and have created their composting gallon bin, these will remain near the windows. Explain that students will be observing what and how the materials in the composting bin are changing over time. (Not all items will change). Before they can begin to observe, have students make a prediction about what they think will happen to the items over the next week.

Finally, explain that students are expected to turn (stir or mix) their compost regularly (at least 3 times weekly) and should keep compost moist (spray weekly). Provide a demonstration for watering and compost.

Guided/Independent Practice:

Day 1: In their science journals, students will record the items in their trash bin and make a prediction. They will draw and describe the items in their compost bin using labels.

Day 2,3,4..: Students will be observing their compost bins daily. They will be using magnifying lenses to observe the compost and try and find any bugs. If they do, they have to draw a picture of the bug. They will also jot notes of their observations and how items are changing or not changing.

Day 7: Before gathering the class for a whole class discussion, have each group review their findings and discuss how their predictions did or did not match up with their observations.

Share/Discussion:

Gather students and discuss/chart their findings.

* What happened to the materials in your compost bins?
* Which items changed? How did the paper change over time? How did the plastic change over time?
* Which items did not change? Why?
* Do you think that we can compost anything? Why or why not?
* What kinds of things can we compost at school based on our classroom trash?
* What are some advantages of composting and recycling waste instead of throwing it into the garbage?
* Exit Ticket: Have students explain and draw a picture for the terms, “compost” and “decomposition”.

Assessment:

Explain to students that they will be designing their own composting mix that will be sold to the public. In order to be sold to the public, they need to make sure that they are creating the best composting solution in order to help others garden their plants. They will be designing and labeling all of the items in their composting solution on a poster. They will have to draw all of the items and label it. For each item, they have to explain why they chose that item on a separate sheet of paper.

Students’ understanding will be evaluated based on discussion, share, the exit ticket, the poster project, and the science journals.

Extension:

* Start to add insects, worms, and other living organisms to the compost and observe what happens.
* Draw a picture or tell a story about the new life of an apple core after it decomposes. The story can be in a form of a “how to” guide or a comic strip.
* Have students design a poster or persuasive letter on why the school should compost.

Assessment Rubric:

1 = Weak 2 = Moderately Weak 3 = Average 4 = Moderately Strong 5 = Strong

1. The student comprehends at some level the concept of composting, a natural way to recycle, and decomposition, which allows nutrients in organic material to return to the soil and enrich it for plant growth in the future.

1 2 3 4 5

2. The student responds and contributes to grouping/ pairing activities.

1 2 3 4 5

3. The student asks questions to clarify verbal information.

1 2 3 4 5

4. The student is able to state and/ or summarize what he /she learned from the lesson.

1 2 3 4 5